

REMARKS/ARGUMENTS

The Applicant originally submitted Claims 1-35 in the application. In the previous response, the Applicant amended Claims 1-3, 12-14 and 25-27 and added independent Claims 36-38. In the present response, the Applicant has not amended, canceled or added any claims. Accordingly, Claims 1-38 are currently pending in the application.

The Examiner indicated in the Final Rejection that independent Claim 37 is allowed. The Examiner also indicated that dependent Claims 3, 14 and 27 would be allowable if rewritten to overcome a 35 U.S.C. §112, second paragraph rejection and include the base claim limitations. The Applicant believes that all of the pending claims are allowable as indicated by the below arguments.

I. Rejection of Claims 1-35 under 35 U.S.C. §112

The Examiner has rejected Claims 1-35 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. More particularly, the Examiner asserts that a monopole antenna printed circuit "having a single ground path including a portion of the inverted F antenna printed circuit" as recited in independent Claims 1, 12 and 25 is vague and indefinite. (See Final Rejection, page 2.) The Applicant respectfully disagrees.

Referring to the embodiment of Figure 1 as an example, the monopole antenna printed circuit 170 is connected to the ground plane on the lower surface through a path that includes a portion of the feed line 140 on the upper surface. From the feed line 140 on the upper surface, the path continues through the conductive interconnection 150 to the inverted F antenna printed circuit

130 on the lower surface. The path to ground then continues through a portion of the inverted F antenna printed circuit 130 to the ground line 160 and the ground plane 120. Thus, the single ground path from the monopole antenna printed circuit 170 to the ground plane 120 includes a portion of the feed line 140, the conductive interconnection 150, a portion of the inverted F antenna printed circuit 130 and the ground line 160. (See paragraphs 23-29 of the present invention and Figure 1.)

Accordingly, the Applicant asserts that a monopole antenna printed circuit "having a single ground path including a portion of an inverted F antenna printed circuit" as recited in independent Claims 1, 12 and 25 is not indefinite but particularly points out and distinctly claims at least a part of the present invention. Accordingly, the Applicant respectfully requests the Examiner to withdraw the §112, second paragraph rejection of Claims 1, 12 and 25 and Claims dependent thereon. Additionally, the Applicant respectfully requests the Examiner to allow issuance of Claims 1-35.

II. Rejection of Claims 1-2, 4-5, 10-11, 25-26, 28-29 and 34-36 under 35 U.S.C. §102

The Examiner has rejected Claims 1-2, 4-5, 10-11, 25-26, 28-29 and 34-36 under 35 U.S.C. §102(a) as being anticipated by U.S. Patent No. 6,515,629 to Kuo, *et al.* The Applicant respectfully disagrees.

Kuo is directed to a dual-band inverted-F antenna that can be operated in two separate bands. (See column 3, lines 3-9.) Kuo discloses a dual-band inverted-F antenna having two metal lines 40, 42, a feeding metal line 60 providing signals to the metal lines 40, 42, and a connecting

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line 26 used to connect the metal lines 40, 42, to a shorting pin 22. (See column 3, lines 3-9 and Figures 1-2.) The dual-band inverted-F antenna, however, does not have a monopole antenna printed circuit on a substrate having a single ground path including a portion of an inverted F antenna printed circuit as recited in independent Claims 1 and 25. Instead, Kuo discloses the metal lines 40, 42, of the dual band inverted-F antenna have multiple paths to ground. As illustrated in Figure 1, each of the metals lines 40, 42, are directly connected to the connecting line 26 and indirectly connected to the connecting line 26 through the feeding metal line 60 and a portion of the other metal line, 40 or 42, respectively. (See Figure 3.) The connecting line 26 is then connected to the shorting pin 22 connected to the ground plane 20. (See column 3, lines 3-29 and Figures 1-2.) Thus, metal line 40 is directly connected to the connecting line 26 and connected to the connecting line 26 via a portion of the feeding metal line 60 and a portion of the metal line 42. Similarly, metal line 42 is directly connected to the connecting line 26 and connected to the connecting line 26 via a portion of the feeding metal line 60 and a portion of the metal line 40. As such, each of the metal lines 40, 42, has two paths to the connecting line 26 and, therefore, two paths to ground via the ground shorting pin 22. Kuo, therefore, does not teach a dual-band antenna including an inverted F antenna printed circuit on a substrate and a monopole antenna printed circuit on the substrate having a single ground path including a portion of the inverted F antenna printed circuit as recited in independent Claims 1 and 25.

Since Kuo does not teach each and every element of independent Claims 1 and 25, Kuo does not anticipate Claims 1 and 25 and Claims dependent thereon. Accordingly, the Applicant

respectfully requests the Examiner to withdraw the §102 rejection with respect to Claims 1-2, 4-5, 10-11, 25-26, 28-29 and 34-35 and allow issuance thereof.

Furthermore, regarding independent Claim 36 and dependent Claims 2 and 26, Kuo does not teach a feed line located on a different plane of a substrate from a radiator of an inverted F antenna printed circuit. Instead, Kuo teaches the metal lines 40, 42, and the feeding metal line 60 are all on the same plane. (See column 3, lines 1-13 and Figures 1-2.) Since Kuo does not teach each and every element of Claim 36, Kuo does not anticipate Claim 36. Accordingly, the Applicant respectfully requests the Examiner to withdraw the §102 rejection with respect to Claim 36 and allow issuance thereof.

III. Rejection of Claim 38 under 35 U.S.C. §102

The Examiner has rejected Claim 38 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,611,235 to Barna, *et al.* The Applicant respectfully disagrees.

Barna relates to an antenna-coupling device for coupling radio frequency signals from a communication device having an internal first antenna. (See column 1, lines 5-7.) Barna discloses one embodiment of the antenna-coupling device that has a geometric shape of a tree structure 20 having three branches b11, b21 and b31. (See column 6, lines 19-28.) The Examiner asserts that the branches b11 and b21 teach a first trace and a second trace of a monopole antenna printed circuit with each trace tuned to differing resonance in a second frequency band as recited in Claim 38. (See Final Rejection, page 5.) The Applicant does not find, however, where Barna teaches the branches b11 and b21 are traces of a monopole antenna printed circuit. Instead, Barna

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discloses that b11 and b21 are antenna-couplings associated with specific domains. (See column 3, lines 60-64 and column 6, lines 29-32.) Additionally, Barna teaches the branches b11 and b21 are couplings for separate frequency bands. (See column 6, lines 27-29.) Thus, even if b11 and b21 are traces of a monopole antenna printed circuit, b11 and b21 are not tuned to differing resonance in a single frequency band but instead represent different frequency bands. Barna, therefore, does not teach a monopole antenna printed circuit including a first trace directly coupled to a second trace and each trace tuned to differing resonance in a second frequency band as recited in independent Claim 38.

Since Barna does not teach each and every element of independent Claim 38, Barna does not anticipate Claim 38. Accordingly, the Applicant respectfully requests the Examiner to withdraw the §102 rejection with respect to Claim 38 and allow issuance thereof.

IV. Rejection of Claims 6-10, 30-33 and 38 under 35 U.S.C. §103

The Examiner has rejected Claims 6-10 and 30-33 under 35 U.S.C. §103(a) as being unpatentable over Kuo in view of either U.S. Patent No. 6,100,848 to Hayes (for Claims 6-8, 30-32 and 38) or either U.S. Patent No. 6,567,048 to McKinzie, III, *et al.* or U.S. Patent Publication No. 2002/0004125 by Ostrovsky (for Claims 9 and 33). As discussed above, Kuo does not teach a dual-band antenna including an inverted F antenna printed circuit on a substrate and a monopole antenna printed circuit on the substrate having a single ground path including a portion of the inverted F antenna printed circuit as recited in independent Claims 1 and 25. Additionally, Kuo does not suggest each and every element of Claims 1 and 25 since Kuo teaches providing multiple

ground paths for the metal lines of the dual band inverted-F antennas. (See column 3, lines 3-8 and Figures 1-2.) Kuo, therefore, does not teach or suggest each and every element of independent Claim 1 and 25.

The Applicant does not find where Hayes, McKinzie or Ostrovsky cures the above deficiency of Kuo. Hayes is directed to printed monopole antennas associated with two frequency bands. (See column 1, lines 12-21.) McKinzie is directed to dielectric materials that can be used as a microstrip patch antenna substrate. (See column 2, lines 43-46.) Ostrovsky is directed to low loss materials for the manufacture of PCBs and antenna boards. (See paragraph 2, page 1.) Additionally, Hayes, McKinzie or Ostrovsky have not been cited to cure the deficiency of Kuo but to teach the subject matter of the above-identified dependent claims. Therefore, the cited combination of Kuo with either Hayes, McKinzie or Ostrovsky does not teach or suggest each and every element of independent Claims 1 and 25 and Claims dependent thereon. Thus, the cited combination of Kuo with either Hayes, McKinzie or Ostrovsky does not provide a *prima facie* case of obviousness for Claims 6-10 and 30-33 which depend on independent Claims 1 or 25, respectively. Accordingly, Claims 6-10 and 30-33 are not unpatentable over the cited combinations. As such, the Applicant respectfully requests the Examiner to withdraw the §103 rejection of Claims 6-10 and 30-33 and allow issuance thereof.

Furthermore, regarding independent Claim 38, the Applicants do not find where the cited combination of Kuo and Hayes teaches or suggests a dual band antenna including a monopole antenna printed circuit tuned to a second frequency having a first trace directly coupled to a second trace and each trace tuned to differing resonance in the second frequency band. The

Examiner asserts that Hayes discloses a monopole antenna printed circuit having a first and second trace. (*See* Final Rejection, page 6.) The traces of Hayes, however, are not directly coupled. On the contrary, as recognized by the Examiner, first conductive trace 18 and second conductive trace 36 are coupled through the grounding structure 34. (*See* Final Rejection, page 12 referring to Figure 5 of Hayes.) Thus, the cited combination of Kuo and Hayes also does not teach or suggest each element of independent Claim 38.

V. Rejection of Claims 12-13, 15-16 and 21-24 under 35 U.S.C. §103

The Examiner has rejected Claims 12-13, 15-16 and 21-24 under 35 U.S.C. §103(a) as being unpatentable over Kuo in view of either U.S. Patent Publication No. 2003/0001787 by Clifton or U.S. Patent Publication No. 2003/0207668 by McFarland, *et al.* The Applicant respectfully disagrees.

As discussed above regarding independent Claims 1 and 25, Kuo does not teach or suggest a dual-band antenna including an inverted F antenna printed circuit on a substrate and a monopole antenna printed circuit on the substrate having a single ground path including a portion of the inverted F antenna printed circuit as also recited in independent Claim 12. Clifton and McFarland have not been cited to cure this deficiency of Kuo but to teach wireless networking circuitry. (*See* Final Rejection, pages 7-8.) Additionally, the Applicant does not find where Clifton or McFarland cure the above deficiency of Kuo. Clifton is directed to an antenna switch and a method of providing a radio frequency signal to an antenna switch. (*See* paragraph 2, page 1.) McFarland is

directed to wireless devices and access systems including a dual frequency wireless LAN device.
(See paragraph 3, page 1.)

Therefore, the cited combination of Kuo with either Clifton or McFarland does not teach or suggest each and every element of independent Claim 12 and Claims dependent thereon. Thus, the cited combination of Kuo with either Clifton or McFarland does not provide a *prima facie* case of obviousness for Claims 12-13, 15-16 and 21-24. Accordingly, 12-13, 15-16 and 21-24 are not unpatentable over the cited combinations. As such, the Applicant respectfully requests the Examiner to withdraw the §103 rejection of Claims 12-13, 15-16 and 21-24 and allow issuance thereof.

VI. Rejection of Claims 17-20 under 35 U.S.C. §103

The Examiner has rejected Claims 17-20 under 35 U.S.C. §103(a) as being unpatentable over Kuo in view of either Clifton or McFarland and in further view of Hayes (for Claims 17-19) or either McKinzie or Ostrovsky (for Claim 20). As discussed above, the cited combinations of Kuo with either Clifton or McFarland does not teach or suggest a dual-band antenna including an inverted F antenna printed circuit on a substrate and a monopole antenna printed circuit on the substrate having a single ground path including a portion of the inverted F antenna printed circuit as recited in independent Claim 12. Additionally discussed above, the cited combinations of Kuo with Hayes, McKinzie or Ostrovsky do not teach or suggest a dual-band antenna including an inverted F antenna printed circuit on a substrate and a monopole antenna printed circuit on the substrate having a single ground path including a portion of the inverted F antenna printed circuit as recited in independent Claim 12. Furthermore, based on the above

arguments, the cited combinations of Kuo with either Clifton or McFarland in view of Hayes, McKinzie or Ostrovsky does not provide a *prima facie* case of obviousness for Claims 17-20 which depend on independent Claim 12. Accordingly, Claims 17-20 are not unpatentable over the cited combinations. As such, the Applicant respectfully requests the Examiner to withdraw the §103 rejection of Claims 17-20 and allow issuance thereof.

VII. Comment on Cited References

The Examiner has not relied on the art made of record and therefore these references are not particularly pertinent to the stated grounds for rejecting the claims. The Applicant retains the right to address these references in detail, if necessary, in the future.

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VIII. Conclusion

In view of the foregoing remarks, the Applicant now sees all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicits a Notice of Allowance for Claims 1-38.

The Applicant requests the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application. The Commissioner is hereby authorized to charge any fees, credits or overpayments to Deposit Account 08-2395.

Respectfully submitted,

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